

# A UNIQUELY AFRICAN FOCUS

**Bioinformatics is a field that has grown exponentially in the past few years, and it is becoming increasingly important to collaborate as the field continues to gather momentum**

Today, bioinformatics and computational biology is an animated field of research and development in Africa, particularly South Africa. Historically, researchers in bioinformatics conduct research in a space where biology, computer science and statistics converge. This understanding of bioinformatics has evolved into something more sophisticated, particularly as it pertains to genomic research. The quantity and type of genomic data that comprise this informatics has increased exponentially on an annual basis. This growth is naturally a reason for excitement, yet also for concern as bioinformatics is subject to the same ethical constraints that monitor all other wet lab biomedical research. The biomedical ethics that governs this kind of research is similar to that which controls clinically-based research.

As bioinformatics grows as a field, a singular concern stands out as an impediment to maintaining the momentum of this burgeoning area: the consistent presence of internationally recognised protocols for storing data, and for transporting genetic material across the continent.

In a field that thrives on collaborative research, and which also indirectly supports economies, bio-computing in Africa is in need of critical engagement with and support for the logistics of creating a super-structural network across the African continent.

The South African National Bioinformatics Institute, (SANBI), founded in 1996 and an affiliate of the University of the Western Cape in South Africa, has grown exponentially in the last 18 years. Professor Alan Christoffels is both the incumbent director as well the recipient of the South African Research Chair (SARCHI) in Bioinformatics and Public Health Genomics. Though not the only site of bioinformatics research in Africa, SANBI is the only institute in Africa dedicated solely to bioinformatics research and is funded to this end. It is internationally regarded as the ideal place on the continent for graduate and postdoctoral training in bioinformatics.

SANBI generally concentrates on genomics research that spans both communicable and non-communicable diseases that is ultimately driven by the quest for biomarker discovery. While human health is clearly the focus of SANBI-based research, SANBI staff are making forays into agricultural research as well.

2011 marked a milestone in genomics research in Africa. Both the Wellcome Trust and the NIH, made strong scientific, political, and economic statements by investing substantial funds to the genomics research community. In particular, these research organisations invested in what is known as the H3Africa programme: the Human, Heredity, and Health programme.

Coincidentally, 2011 was the same year in which the Southern African Human Genome Programme ([sahgp.org](http://sahgp.org)) was established, which is specifically tailored to enhance South Africa's capacity for genomics research. More recently, the US-South Africa Program for Collaborative Biomedical Research provided yet another strong investment into biomedical research that provides the impetus for African scientists to drive genomics research.

Training researchers in an environment underpinned by collaborative bio-computing projects has been enormously successful through partnerships between African, North America, and European scientists. Horizon 2020 is an ideal framework within which to continue these partnerships. Specifically, Horizon 2020 presents us with the ideal opportunity to develop biobank standards. This in turn provides the platform to devise, with international partners, ways to transport and transfer genetic material and its associated (meta) data, and house and maintain it. So, Horizon 2020 is not only a research opportunity on the African continent, it is also potentially a place for political and financial investment into high-performance computing and biomedical logistics.

The question of intellectual property impacts bio-computing research as is commonly experienced in all collaboration-based research. Peculiar to Africa-based research is the question of what informatics remains on the continent and is archived in Africa once the research project has concluded. The end of a bio-computing project in Africa is often the beginning of a discussion on African scientific history, cultural history, ethics, and identity, so this field is constantly growing in influence in both the science and the humanities. Bioinformatics, under the umbrella of Horizon 2020, is not then only a space for bio-computing research, but it is potentially the genesis of new scholarly intersections of intellectual inquiry with a uniquely African focus.



**Alan Christoffels**  
**Director, and DST/NRF Research Chair in**  
**Bioinformatics and Public Health Genomics**  
**South African Medical Research Council Bioinformatics**  
**Unit, South African National Bioinformatics**  
**Institute, University of the Western Cape**

tel: +27 2195 93645

[alan@sanbi.ac.za](mailto:alan@sanbi.ac.za)  
[www.sanbi.ac.za](http://www.sanbi.ac.za)